The effect of feeding a high-fibre diet on a satiety in gastating sows

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Publication date:
2014

Document version
Early version, also known as pre-print

Scientific Student Conference › WARSAW

Programme and Abstract Book

November 14-15, 2014

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THE ORGANISING COMMITTEE AT WULS-SGGW GRATEFULLY ACKNOWLEDGES THE SUPPORT OF

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University of Hohenheim
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ISBN 978-83-7583-592-2

Printing: Agencja Reklamowo-Wydawnicza A. Grzegorczyk, www.grzeg.com.pl

5.3 AGRIBUSINESS FOR MODERN SOCIETY 5
Animal Sciences 3
Saturday, 15.00-16.00- Venue: Building 33, Auditorium II

5.3.C. THE EFFECT OF FEEDING A HIGH-FIBRE DIET ON SATIETY IN GESTATING SOWS

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Study Programme Level: BSc

Keywords: sow, satiety, hunger, fibre

Hunger in restrictively fed gestating sows remains a challenge for the European pig industry. The EU states that sows must be provided with enough bulk or high-fibre food to satisfy their hunger. Therefore, it is relevant to provide knowledge on the physical, metabolic and hormonal effects of high-fibre diets on satiety in order to predict quantities and dietary fibre (DF) sources necessary to reduce hunger and increase satiety in gestating sows. Studies show that the bulkiness of a diet, depending on the volume itself or the water binding capacity (WBC) increases short-term satiety (up to 1.5-2 hours post-meal) in gestating sows due to gastric distension. When feeding restrictively, diets high in soluble fibre (HF-S, 28-43% DF) delayed the gastric emptying rate due to physical effects from WBC and viscosity. Especially, when HF-S diets reach the distal ileum, caecum and colon, production of short charin fatty acids (SCFA) stimulate the release of peptide tyrosine tyrosine (PYY) mediating the 'ileal brake' that induces a further delay in gastric emptying, increases the small intestinal transit time and reduces the release of digestive enzymes. This results in a slowly release of glucose, less diurnal variation in glucose absorption and in plasma insulin- and glucose concentrations, resulting in increased satiety up to 2.5-3 hours after a meal. The increase in the slowly released energy source, SCFA, when feeding restrictively HF-S diets, prolongs satiety up to 10 hours post-meal. Even though restrictively fed HF-S diets seem to reduce hunger, ad libitum feeding was the only feeding strategy reducing feeding motivation. However, ad libitum feeding resulted in fatter sows. In conclusion, restrictively feeding of a low fibre diet supplemented with ad libitum access to roughage low in energy and high in WBC may be a possible way to reduce hunger in sows without reducing sow productivity.